

2007 Water System Plan Executive Summary



Seattle Public Utilities (SPU) manages and operates the water system serving Seattle residents and wholesale customers in nearby cities and water districts. This *2007 Water System Plan* describes how SPU meets current and future water demands, ensures high quality drinking water, maintains its water system at the lowest cost, and continues its legacy of environmental stewardship.

It is clear that uncertainties surrounding the Puget Sound region's population growth, the degree of economic activity, and the potential impact of climate change will affect future demand for water and the possible need for new sources of supply.

Sophisticated planning tools have been developed by SPU to analyze the impact of a range of variables over the next 50 years. SPU uses these tools to facilitate discussion and evaluate future scenarios in order to make cost-effective, responsible decisions while meeting environmental goals.

Planning for uncertainty is the framework under which this *2007 Water System Plan* was prepared, and this framework is particularly evident in the analysis related to the water demand forecasts and water supply alternatives. This analysis indicates that no new water supply sources are needed for SPU for many decades, even when factoring in potential climate change and continued population growth.

The *2007 Water System Plan* articulates SPU's commitment to:

- Ensuring a long-term, high-quality water supply while protecting the environment and fishery resources.
- Using asset management principles in business decisions to provide the highest value to ratepayers over the long-term.
- Continuing to be a leader in water conservation.
- Being customer-driven.
- Working together with other water providers and regional jurisdictions to address water issues.

PURPOSE OF THE WATER SYSTEM PLAN

SPU prepared the plan under regulations adopted by the Washington State Department of Health (WDOH) for public drinking water suppliers. The plan is also consistent with the WDOH Water Use Efficiency Proposed Draft Rule, requirements of the Growth Management Act, and local and regional land use plans.

SIX YEARS OF INNOVATION AND PROGRESS: 2001-2006

SPU has accomplished much and made significant forward progress since the prior *2001 Water System Plan* was published. Significant accomplishments are highlighted below.

SPU Progress and Changes since the *2001 Water System Plan*

Accomplishments	Description
Improved Business Practices	Shifted to an asset management approach that has intensified SPU focus on the delivery of cost-effective service to customers – today and into the future. This facilitates decision-making that values environmental and social benefits while minimizing expenditures.
Signed New Wholesale Contracts	Signed a long-term declining block contract with the Cascade Water Alliance (CWA). The contract provides certainty about the amount of water CWA member utilities will purchase from SPU through 2053 and reduces the long-term demand on the system.
Negotiated Agreements to Secure the Future	Negotiated an agreement with the Muckleshoot Indian Tribe for the Cedar River that strengthens protection of in-stream resources, establishes greater certainty for the region's water supply, supports Tribal treaty rights, and creates a positive framework for resolving future issues with the Tribe.
Saved Water	Provided water conservation programs to customers that are among the most aggressive and effective in the country, producing a continuing decline in per capita demand.
Protected Fish Habitat	Implemented new habitat and source water protection efforts in Seattle's municipal watersheds, including passage for three species of anadromous fish above the Landsburg Diversion Dam—ending 100 years of blockage and opening up 17.5 miles of protected fish habitat on the Cedar River.
Improved Drinking Water Quality	Brought online state of the art water treatment facilities for the Cedar River and South Fork Tolt supplies designed to protect public health, meet regulations for the foreseeable future, and improve the water's taste and odor.
Met Regulatory Requirements	Resolved two WDOH compliance agreements, the Cedar Agreed Order, and the Lead and Copper Bilateral Compliance Agreement.
Covered In-Town Reservoirs	Covered or buried several in-town reservoirs, in compliance with SPU's Reservoir Covering Plan, to enhance protection of drinking water quality while providing open space and improved community amenities.
Safeguarded the Water System	Completed post-9/11 vulnerability assessments and security improvements to safeguard the water system from intentional or accidental emergency events.
Enhanced System Reliability	Completed several other major capital projects to increase reliability of the water system, including: <ul style="list-style-type: none">• Replacement of the SCADA system used for monitoring and control.• Addition of a second Tolt transmission pipeline.

CONTENTS OF THE *2007 WATER SYSTEM PLAN*

The *2007 Water System Plan* includes:

- Revised and updated policies to guide SPU and how it conducts business.
- Service levels for managing the system and reporting performance to customers.
- A commitment to regional conservation goals that extends through 2030.
- An updated official water demand forecast and analysis of future supply options, including new sources, enhancement of existing resources, reclaimed water projects, desalination of seawater, and increased conservation.
- Strategies for meeting future challenges and uncertainties, including potential impacts of climate change on water supplies, emerging water quality issues, and aging infrastructure.
- An evaluation of the water system and its various facilities and components, including condition of key assets and implementation plans to address needs, gaps, and issues for each of SPU's water line business areas.

HIGHLIGHTS FROM *2007 WATER SYSTEM PLAN*

SPU has reorganized its water system operations into business areas, each of which has responsibility for managing a facet of the overall water utility. Each business area has developed strategies and action plans for the next six years and beyond. Key implementation actions for each business area are highlighted below.

Water Resources Business Area



**Landsburg
Diversion Dam**

The Water Resources business area ensures that SPU water customers will have sufficient water to meet their short-term and long-term needs while protecting instream resources.

Year-to-year climate variability has been an issue in the past, and will continue to be in the future. SPU will continue to actively

manage its water resources and will make improvements to ensure additional system flexibility and reliability.

Key water resource findings and actions in this plan include:

- No new source of water supply is needed until after 2060, even after considering uncertainties in the factors that influence water demand and the potential impacts climate change may have on water supplies.
- A commitment to existing water conservation programs along with an additional 15 mgd of average annual conservation savings from 2011-2030.
- An evaluation of potential future water supply sources for cost, source development issues, environmental impacts, and public trust values. Conservation and traditional supply sources are the options with the greatest overall positive benefits and lowest costs. Reclaimed water projects analyzed have costs that far exceed the other options available.
- Change in the place of use of the Cedar River and Lake Youngs water rights claims to the SPU service area, as allowed by the 2003 Municipal Water Law.
- Continued exploration of adaptive management strategies and operational changes to optimize use of existing water sources.
- Plans to improve water supply facilities, including the Morse Lake dead storage facilities and Landsburg Diversion Dam.

Water Quality and Treatment Business Area



**Water quality
analyst at SPU's
laboratory**

The Water Quality and Treatment business area ensures that SPU provides water that meets or exceeds drinking water quality regulatory requirements to not only protect public health, but ensure drinking water is aesthetically pleasing to customers in terms of appearance, taste, and other factors.

Key water quality and treatment actions identified in this plan include:

- Completing the reservoir covering program, including decommissioning of one or two in-town reservoirs.

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- Exploring approaches to help SPU customers maintain excellent water quality in their own plumbing systems.
- Monitoring and investigating ways to improve or protect drinking water quality, such as completion of studies for Kerriston Road and Lake Youngs.
- Keeping abreast of emerging water quality issues to ensure that SPU water quality meets regulations for years to come.

Transmission and Distribution Business Area



**Installation of the
Tolt Transmission
Pipeline**

The primary challenge for the Transmission and Distribution business area is to cost-effectively manage aging facilities while meeting service levels for water delivery to wholesale and retail customers.

Key transmission and distribution actions identified in this plan include:

- Implementing strategies for managing transmission and distribution system assets, including implementation of the cathodic protection program for transmission pipelines.
- Improving areas in the distribution system that have lower water pressure than required under established service levels.
- Improving the ability of Cedar or Tolt sources to serve more of the service area by implementing supply transfer and transmission improvements that prove to have a positive net present value to customers.

POLICIES AND SERVICE LEVELS

Revised and updated policies for SPU's water business areas have been developed and are summarized in the table below. These policies will guide SPU and how it conducts business.

Service levels for SPU's water business areas have also been developed. They are statements of desired performance outcomes that are of high priority to SPU's customers or required by regulators. SPU utilizes service level objectives – broad statements of intent – to establish the direction of each of its business areas while using service level targets to establish measurable performance goals.

Policies to Guide SPU's Water System Activities

Policy	Policy Statement
Asset Management	Use Asset Management principles to guide all capital and O&M financial decisions to deliver services effectively and efficiently.
Environmental Stewardship	Protect and enhance the environment affected by the utility while meeting SPU's responsibilities to provide drinking water.
Security and Emergency Preparedness	Institute and maintain appropriate safeguards to protect against security risks and sustain emergency response readiness to ensure the continuity of drinking water services, including fire protection service.
Meeting Customer Expectations	Provide retail and wholesale drinking water service that responds to changing customer expectations centered on providing reliable, high-quality water, and guided by asset management principles.
Service Area	Continue providing service within the service area boundary as defined in the <i>2001 Water System Plan</i> , allowing for new customers within that area at SPU's discretion.
Regional Role and Partnerships	Be a leader in seeking regional cooperation and efficiencies that benefit the customers of SPU, other water utilities, and the environment.
Planning for Uncertainty	Base supply investment strategies on future outlooks for supply and demand that incorporate an evaluation of uncertainties using the best available analytical tools.
Supply Reliability	Plan to meet full water demands of "people and fish" under all but the most extreme or unusual conditions, when demands can only be partially met.
Resource Selection	In planning to meet future customer demand, select new sources of supply from all viable options, including conservation programs, improvements to system efficiencies, use of reclaimed water, and conventional supply sources, based on triple-bottom-line analysis.
High-Quality Drinking Water Provision	Manage drinking water quality from the water source to the customer taps in coordination with wholesale customers to protect public health, comply with drinking water quality regulations, and maintain and improve public confidence in the drinking water quality.
Watershed Protection	Control human activity and be prepared to respond to emergencies in the municipal watersheds to maximize protection of drinking water source quality.
Transmission System Redundancy	Consider redundancy in the transmission system on a case-by-case basis, with decisions based on an evaluation of net present value.
Access to Seattle Regional Water System	Evaluate requests for access to the Seattle regional water system using the <i>Access to Seattle Water System Guidelines</i> , based on the unique characteristics of the water that would be moved through the system.
Distribution System Redundancy	Consider redundancy for the distribution system on a case-by-case basis, with decisions based on an evaluation of net present value.

The *2007 Water System Plan* represents SPU's first effort to document service level objectives and targets, and monitor the utility's success at meeting those targets. As part of its asset management initiative, SPU will continue to track its performance relative to those targets, assess its cost-effectiveness in meeting the

service levels, and seek input from customers on their willingness-to-pay for the levels of service SPU provides.

PLAN IMPLEMENTATION

Implementation of this *2007 Water System Plan* requires completion of capital projects, programs, and operations and maintenance (O&M) activities. Cost estimates for these new and ongoing efforts are included in this plan, along with projected impacts to water rates. Funding levels and rates are subject to approval by City Council through the regular budget and rate adoption processes.

Capital Facilities Budgeting

SPU's draft Capital Facilities Plan totals more than \$1 billion from 2007 through 2030. Approximately one-third of this total is for replacement or rehabilitation of infrastructure that has reached the end of its economic life. SPU anticipates significant annual spending in the near-term to accommodate several major projects, such as the reservoir burying program. Once these major capital projects have been completed, capital facility spending is expected to decline. However, beyond 2012 there is a greater range of uncertainty. Experience has shown that new requirements emerge and projections change.

Operation and Maintenance Cost Outlook

As infrastructure ages, the costs associated with repairs increase, at least until those assets are replaced. SPU expects annual O&M costs to increase by approximately \$3 million (in 2006 dollars) by 2030, due primarily to the increasing costs of repairing aging water mains in its distribution system.

Financial Program

SPU's water system is experiencing a period of capital expenditures not required since the system was originally constructed 100 years ago. SPU has been making, and continues to make, significant investments to protect public health, comply with federal and state regulations, and replace aging infrastructure. In order to pay for required facilities and improvements, and particularly to pay off debt for those facilities recently added, rate increases moderately higher than the rate of inflation are projected until about 2015. After 2015, rates should stabilize and begin decreasing in real terms.

CONCLUSION



The past six years have been highly productive for SPU's water line of business. As a result of SPU's attention to water supply planning, SPU is moving forward with confidence that its existing supplies are adequate for at least another 50 years. At the same time, SPU and many of its wholesale customers have made a commitment to continue investments in water conservation.

In addition, SPU's water quality improvements, such as its new treatment facilities and reservoir burying program, are helping to ensure that high drinking water quality is preserved for its customers. Finally, SPU's asset management initiative is helping to ensure that long-term costs to ratepayers are minimized without decreasing the level of service below established targets. All of SPU's efforts aim to provide its customers with excellent service at minimum costs, now and into the future.